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IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his)
capacity as ATTORNEY GENERAL)
OF THE STATE OF OKLAHOMA and)
OKLAHOMA SECRETARY OF THE)
ENVIRONMENT C. MILES TOLBERT,)
in his capacity as the)
TRUSTEE FOR NATURAL RESOURCES)
FOR THE STATE OF OKLAHOMA,)
Plaintiff,)
vs.) 4:05-CV-00329-TCK-SAJ
TYSON FOODS, INC., et al,)
Defendants.)

- - - - -

VOLUME I OF THE VIDEOTAPED
DEPOSITION OF EUGENE WELCH, PhD, produced as a
witness on behalf of the Defendants in the above
styled and numbered cause, taken on the 14th day of
August, 2008, in the City of Tulsa, County of Tulsa,
State of Oklahoma, before me, Lisa A. Steinmeyer, a
Certified Shorthand Reporter, duly certified under
and by virtue of the laws of the State of Oklahoma.

1 from our standpoint and our knowledge.

2 Q Do you have or can you tell me what
3 suggestions, any suggestions you may have made to
4 Dr. Cooke?

5 A Oh, lots. I mean, no, I can't go back and, 01:46PM
6 you know, recall any individual. Hundreds and vice
7 versa for that matter.

8 Q Where is Dr. Cooke located?

9 A In Kent, Ohio.

10 Q And how did you all do most of your 01:46PM
11 communicating in terms of your work on this report?

12 A Phone, E-mail, and we met several times.

13 Q Do you recall about how many times you all
14 met?

15 A I think he came out three times to Bellevue 01:47PM
16 and we met in Bellevue at the CDM office, and then
17 we met here in -- probably three times in Tulsa.

18 Q Okay, and who would have been the
19 representatives for CDM when you met up in
20 Washington? 01:47PM

21 A Well, David Page was there once, Ron French
22 and then the lady who did my calculations or our
23 calculations, Melina Foster, she was there. Tony
24 Gendusa. I think Drew Santini was there at least
25 one time. Jack Jones was there twice I think. I 01:48PM

1 think that's probably all. Oh, there was another
2 CDM person who worked on the fish data. I can't
3 remember what her name was.

4 Q Who was the final editor of the report?

5 A I think the final editor -- well, David read 01:48PM
6 it and --

7 Q Are you referring to Mr. Page?

8 A Mr. Page.

9 Q Okay.

10 A Yeah, Mr. Page read the report. We all got 01:48PM
11 together on the telephone and went through parts of
12 it. So, you know, it's Dennis and I reviewing this
13 and trying to cover all bases primarily and writing
14 in a way to make it understandable to everybody and,
15 you know, I've had lots of good suggestions from 01:49PM
16 David Page and Kelly Burch.

17 Q What were those suggestions?

18 A Well, for clarity.

19 Q Such as?

20 A Such as -- I think I told you earlier Kelly -- 01:49PM
21 one I can remember, Kelly had some very good
22 suggestions about the section on oxygen deficit
23 rate, and after reading it again, it wasn't real
24 clear, so I worked it over, and a lot of it is just
25 being self critical. I reviewed a lot of my stuff 01:50PM

1 over and over again to -- and found things that
2 weren't clear, things I had left out. So it was a
3 continual process.

4 Q Did either Miss Burch or Mr. Page ask you and
5 Dr. Cooke to make any changes before the final
6 report came out?

01:50PM

7 A Well, they suggested things that weren't clear
8 and asked us questions and were a big help, but, you
9 know, it was up to us to decide whether we wanted to
10 take their suggestions or not or make corrections
11 that accommodated and improved clarity.

01:50PM

12 Q What suggestions did either one of them make
13 to you and Dr. Cooke?

14 A Oh, I would say like somewhere between 30 and
15 50 suggestions in terms of wording primarily.

01:50PM

16 Q Did either one of them ask you or Dr. Cooke to
17 change any of your opinions?

18 A No.

19 Q Did they ask you to change anything else of
20 substance in the report?

01:51PM

21 A No.

22 Q Did -- who else besides Miss Burch and Mr.
23 Page looked at it for editing purposes?

24 A Olsen.

25 Q I'm sorry. Go ahead.

01:51PM

1 **A** Olsen and Fisher and Jack Jones looked at the
2 early versions, but I think we didn't -- we got very
3 few suggestions from them.

4 **Q** Did Dr. Olsen ask you to consider making some
5 revisions to the report?

01:52PM

6 **A** He had two or three suggestions. He just
7 recently read it.

8 **Q** You mean after your report came out?

9 **A** Yeah.

10 **Q** What suggestions did he make to you?

01:52PM

11 **A** Oh, this was just the other day. I should be
12 able to remember that, but let's see. I can be
13 specific to some extent.

14 **Q** I tell you what. We can go off the Record
15 here and change tapes and that will give you a
16 chance to look at that if you like.

01:52PM

17 **A** Okay.

18 VIDEOGRAPHER: We are now off the Record.
19 The time is now 1:52 p.m.

20 (Whereupon, a discussion was held off
21 the Record.)

01:52PM

22 VIDEOGRAPHER: We are back on the Record.
23 The time is 1:55 p.m.

24 **Q** Dr. Welch, what are you looking for there?

25 **A** Looking for the suggestions of Dr. Olsen.

01:55PM

1 Q Okay. Anything else from Dr. Fisher?

2 A So I altered the report with regard to that.

3 He also suggested I add a figure that he had seen in

4 a book that I had written, and so I did that figure,

5 whatever it is. I can tell you. It's toward the

01:59PM

6 end. Figure 41 he suggested I add.

7 Q And why did he make that suggestion?

8 A Well, because the loading of phosphorus to

9 Tenkiller is -- I mentioned this earlier -- is right

10 at the top of reservoir -- of a large sample size of

02:00PM

11 reservoirs and lakes that were considered in the

12 U.S. in a publication back in the '70s, so we

13 thought that would be instructive to put -- to enter

14 the loading of Tenkiller on this plot to show its

15 relative magnitude relative to these other lakes and

02:00PM

16 reservoirs.

17 Q Anything else?

18 A No. That's it.

19 Q You mentioned Jack Jones also. Did he make

20 any suggested revisions before your report was

02:00PM

21 issued?

22 A Jack Jones had some suggestions early on. In

23 fact, there's a couple of figures in here that Jack

24 Jones actually created, not in my sections but in

25 Dennis'.

02:01PM

1 Q Okay.

2 A Maybe you're not interested in that now. I
3 don't know. I'll tell you anyway.

4 Q That's okay.

5 A It's Figure 7.1 and 7.2, and I think that 02:01PM
6 the -- you know, he's written quite a few papers,
7 and with regard to land use in the introduction,
8 Dennis had described land use in one of those bullet
9 points. I think he got some of that information
10 from Jack. 02:01PM

11 Q Other than Dr. Olsen, have any of the other
12 experts retained by the State in this case contacted
13 you since you submitted your report in late May to
14 suggest any kind of revisions or additions or
15 deletions from your report? 02:02PM

16 A No.

17 Q Dr. Welch, have you ever been inside a
18 drinking water treatment plant in the Illinois River
19 watershed?

20 A No. 02:02PM

21 Q And this I think was made clear a minute ago
22 but let me make sure because it will save just a
23 whole lot of questions. You are not intending to
24 offer any opinions or testimony at trial with regard
25 to disinfection byproducts; correct? 02:02PM

1 Q Okay. Anything else on the trophic state
2 besides what's relevant to oxygen that you'll be
3 offering opinions on at trial?

4 A No. I may be mentioning, you know, increased
5 phosphorus means eutrophic agent or something like
6 that, but not where I get to reciting this trophic
7 state indicator such as presented here, you know.
8 The Carlson index values, I won't be using those.

03:30PM

9 Q Dr. Welch, I'm going to hand you what I've
10 marked as Exhibit No. 12 to your deposition. There
11 you go, sir. Exhibit No. 12 is Figure 8 out of the
12 Cooke-Welch report. Do you recognize this report?

03:31PM

13 A I do.

14 Q Or do you recognize Figure 8?

15 A I do.

03:31PM

16 Q Do you know who prepared this graph in Figure
17 8?

18 A Well, Melina Foster is the one who did the
19 computer work. Dennis gave her the numbers.

20 Q With CDM?

03:32PM

21 A Yeah.

22 Q Do you have an opinion as to whether there has
23 been a substantial decline in the trophic state of
24 any part of Tenkiller Reservoir in the last five
25 years, that is, 2003 through 2007, compared with the

03:32PM

1 Cooke have used Broken Bow as a comparison
2 reservoir, have you not?

3 **A** Yes, yes, we have.

4 **Q** In the course of the evaluation that you
5 performed in this case, have you studied any other 03:50PM
6 lakes or reservoirs other than Lake Tenkiller or
7 Broken Bow within the state of Oklahoma?

8 **A** Not with respect to this case, no.

9 **Q** Have you done any study at all, whether it was
10 in connection with this case or not, on other 03:50PM
11 reservoirs in Oklahoma?

12 **A** Well, this gets back to Grand Lake.

13 **Q** Right. Besides Grand Lake?

14 **A** No.

15 **Q** Who chose Broken Bow Reservoir to compare to 03:50PM
16 Tenkiller?

17 **A** It was kind of a community choice.

18 **Q** A community choice?

19 **A** Yeah. Well, we first started looking at
20 reservoirs in Missouri that Jack Jones had built a 03:51PM
21 database on, and we picked some from there.

22 **Q** Which ones did you pick from Missouri?

23 **A** Stockton and -- actually we picked Stockton,
24 we looked at Stockton, but Jack only had data from
25 near the dam, the lacustrine zone. He didn't have 03:51PM

1 IN THE UNITED STATES DISTRICT COURT FOR THE
2 NORTHERN DISTRICT OF OKLAHOMA
3
4

5 W. A. DREW EDMONDSON, in his)
6 capacity as ATTORNEY GENERAL)
7 OF THE STATE OF OKLAHOMA and)
8 OKLAHOMA SECRETARY OF THE)
9 ENVIRONMENT C. MILES TOLBERT,)
10 in his capacity as the)
11 TRUSTEE FOR NATURAL RESOURCES)
12 FOR THE STATE OF OKLAHOMA,)

13 Plaintiff,)
14)

15 vs.)

16) 4:05-CV-00329-TCK-SAJ
17)

18 TYSON FOODS, INC., et al,)
19)

20 Defendants.)
21 - - - - -
22 - - - - -
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26 VOLUME II OF VIDEOTAPED

27 DEPOSITION OF EUGENE WELCH, PhD, produced as a
28 witness on behalf of the Defendants in the above
29 styled and numbered cause, taken on the 15th day of
30 August, 2008, in the City of Tulsa, County of Tulsa,
31 State of Oklahoma, before me, Lisa A. Steinmeyer, a
32 Certified Shorthand Reporter, duly certified under
33 and by virtue of the laws of the State of Oklahoma.

1 **A** Generally that's the trend.

2 **Q** Okay. What are rough fish?

3 **A** Well, they're -- they tend to be detritivores
4 such as the common carp, European carp. That's one
5 example. 09:39AM

6 **Q** Did you review fishery data to see if this is
7 true to Tenkiller?

8 **A** We did review fishery data. Actually we had
9 catch data, and so carp weren't a very, as I recall,
10 a very important part of it, and I didn't have catch 09:40AM
11 data for carp. I wish I had but I didn't.

12 **Q** Okay. Maybe you just answered this, but where
13 is your sampling data to support that?

14 **A** Well, we went to the Department of Wildlife
15 Conservation for Oklahoma and got what catch data 09:40AM
16 they had, and those were on sport fish, not on carp
17 that I saw. Now, let me say that I mentioned Tony
18 Gendusa, and Tony Gendusa prepared this report for
19 me for which I relied on, and I just haven't seen
20 carp data. 09:40AM

21 **Q** Are rough fish --

22 **A** Well, let me say one other thing. The way
23 these data are collected were with nets and gill
24 nets and electrofishing, and carp are very
25 difficult, very difficult to catch either way. 09:41AM

1 for largemouth bass as well smallmouth bass.

2 Q Just a moment, Dr. Welch. Dr. Welch, let me
3 ask you to -- let me find Exhibit 29. It's actually
4 Figure 37 of your report. Here we go. Here it is.

5 Take a look at that for a moment. Have you had a 10:55AM
6 moment to look at it there?

7 A Yeah.

8 Q I want to ask this question: Who decided
9 where to draw the line showing quality fishery lower
10 limit? 10:55AM

11 A That's an opinion of the fisheries biologist,
12 in this case, Paul Balkenbush. I'm getting good at
13 his name. Geez.

14 Q What other source?

15 A That's all I know. I mean these are the 10:56AM
16 conversations between Tony Gendusa and Mr.
17 Balkenbush.

18 Q What's the source for where the line has been
19 drawn at what is optimal versus suboptimal for
20 dissolved oxygen and for temperature for the fish 10:56AM
21 species?

22 A That's not in here in this.

23 Q Is that not in that exhibit?

24 A No.

25 Q I don't guess it is. That's okay. 10:56AM

1 **A** Yeah. I mean --

2 **Q** Do you understand, Dr. Welch, that the court
3 set a deadline of May 28th of this year for you to
4 provide us with your opinions in this case?

5 MR. PAGE: Object to the form. 01:42PM

6 **A** Actually, no.

7 **Q** Nobody has ever told you that?

8 **A** Well, I knew there was a deadline. I didn't
9 know it stopped us working. Nobody's ever told me
10 to stop working. 01:42PM

11 **Q** Are you operating under the assumption that
12 you can modify your opinions from this point forward
13 and offer new opinions or modified opinions?

14 MR. PAGE: Object to the form.

15 **A** Am I under the assumption? Can you be more 01:43PM
16 specific?

17 **Q** I think that's pretty specific. I can't.

18 MR. PAGE: Same objection.

19 **A** It depends on, you know, what kind of data
20 and, you know, if I discuss it with the people who 01:43PM
21 are running the show. I mean --

22 **Q** And who would that be?

23 **A** That would be David Page.

24 **Q** When do you plan to be finished with your work
25 in this case? 01:43PM

1 **A** I can't predict.

2 **Q** Are you planning to attempt to alter or modify
3 your report as you review this additional
4 information?

5 **A** It remains to be seen whether it's necessary 01:43PM
6 or not.

7 **Q** Are you planning on doing that if it's
8 necessary?

9 MR. PAGE: Object to form.

10 **A** If it's necessary and after consultation with 01:43PM
11 Dennis about our report together, then I could
12 submit a supplemental. It's my understanding that
13 supplementals can be submitted if it's approved.

14 **Q** Who do you have that understanding from?

15 **A** David Page. 01:44PM

16 **Q** What are the -- what data have you reviewed
17 since May 28th of this year?

18 **A** Only literature and --

19 **Q** What literature?

20 **A** I read -- well, literature that I cited in the 01:44PM
21 report. I went back and read it, and I looked in
22 literature cited and looked up some of those other
23 papers. You've got some of that right in here. I
24 gave it to you.

25 **Q** Anything that you have reviewed since May 28th 01:44PM

1 Q Dr. Welch, my name is Michael Bond and I
2 represent Tyson Foods.

3 A Hello, Michael.

4 Q How are you?

5 A Good. 01:48PM

6 Q I got a few questions for you. I'll try to
7 make sense of it. Going second in these, you kind
8 of jump around a little bit. So I'll try to put
9 some context in the question before I ask it to kind
10 of give you a fair chance at, you know, 01:48PM
11 understanding what I'm looking for. If you don't
12 understand what I'm asking, just like with Mr.
13 Bassett, please let me know --

14 A Okay.

15 Q -- that you don't understand. Otherwise, I'll 01:48PM
16 assume if you answer me, that we're on the same
17 page.

18 A I understand.

19 Q Let's look at Exhibit 3A, which I believe is
20 your latest errata, which is right here. 01:48PM

21 A Okay.

22 Q The tables that are attached, Table 1 and
23 Table 3 to Exhibit 3A, could you take a look at
24 those?

25 A Yeah. 01:49PM

1 Q The data that you used to revise these
2 tables --

3 A Well, now, wait a minute. These aren't
4 numbered. Just Page 2 and 3?

5 Q I don't know. The actual errata says, 01:49PM
6 substitute attached revised Table 1 and then it
7 says, substitute attached Table 3, so there's a
8 Table 1 here and a Table 3.

9 A I don't have those. Well, this is what I
10 signed, this stuff right here. 01:49PM

11 Q Well, what am I looking at? Sorry. This
12 might be Cooke's. All right. That's the wrong
13 errata. Let's talk about these.

14 A Yeah, these are mine.

15 Q From this one --

16 A It's these three that were changed. This one
17 is redundant. It's like it was originally.

18 Q Okay. So the three that were changed are the
19 one titled total phosphorus data for Broken Bow;
20 correct? 01:50PM

21 A Correct.

22 Q Average seasonal transparency for Tenkiller;
23 correct?

24 A Correct.

25 Q And seasonal average chlorophyll values for 01:50PM

1 Tenkiller; correct?

2 **A** Correct.

3 **Q** Okay. Prior to issuing your report in this
4 case on -- in May, did you have the data that you
5 used to revise those tables?

01:50PM

6 **A** Yes.

7 **Q** Okay.

8 **A** They're in the figure, the bar graph.

9 **Q** Okay. Tell me what the revision is.

10 **A** The revision is filling in these tables to be

01:50PM

11 consistent with the data that were used to make the
12 bar graph. We recognized that -- we went looking
13 for these individual values on Monday when we looked
14 at the bar graph to compare with the 2008 data, and
15 they weren't here, 2001 through 2004. So we got on
16 the phone and found out why they weren't there. I
17 still don't know why they weren't, but we got them
18 entered and that's -- so these tables are now
19 complete.

20 **Q** But you had that data prior to issuing the
21 report?

01:51PM

22 **A** We had the data, yeah. It just somehow got
23 omitted when these were -- when these were
24 constructed for the appendix of the report.

25 **Q** Okay. Exhibit 2 to your deposition is this

01:51PM

1 **A** Ron French and his bunch of guys did that.

2 **Q** Okay. Did you tell them to do this?

3 **A** They just started doing it as we started the
4 sampling process and they sent it to us.

5 **Q** Did you supervise this process at all? 03:10PM

6 **A** Sure.

7 **Q** How exactly did you supervise --

8 **A** I did more supervising -- I mean it was pretty
9 much okay to start -- well, to begin with, they
10 didn't have oxygen across the abscissa and depth on 03:10PM

11 the -- they had depth across here and oxygen here,
12 and I don't like to look at it that way. So I had
13 them change it around and they did that, and so they
14 just kept cranking these data out as they collected
15 them, and we kept observing them, and then probably 03:10PM

16 last summer we started using the data to compute
17 oxygen deficit rates, and in that sense, I used -- I
18 shouldn't say I used. Melina Foster helped me do
19 that. She did the computations and I supervised
20 that, and Denny got involved in that as well. We 03:11PM
21 had had to pick data that would give us a good range
22 in concentration. So we went through that process.

23 **Q** Okay. When was that created, Figure 24?

24 **A** This figure was -- well, in the beginning
25 these all came out with -- on a single sheet. So in 03:11PM

1 **A** I haven't --

2 MR. PAGE: Object to the form.

3 **A** I haven't personally handled data, but I've
4 certainly looked at data that Stevenson has produced
5 in meetings and, you know, if you call that study, 04:10PM
6 looking at it and going on with trying to interpret,
7 you know, I'm interested in it from an academic
8 standpoint frankly.

9 **Q** Okay. What opinions or conclusions in your
10 report are affected by your study or review of the 04:10PM
11 Stevenson data?

12 **A** None.

13 **Q** Would it be fair for me to say that your
14 opinions regarding algae levels and the water
15 clarity are limited to Lake Tenkiller? 04:10PM

16 **A** Right, yes.

17 **Q** Have you formed any opinions regarding whether
18 the quality of water in the Illinois River or
19 streams in the Illinois River watershed are adequate
20 to support the use of those waters for canoeing, 04:11PM
21 swimming or other forms of recreation?

22 **A** There are data from stream sections in my
23 report that compare those concentrations -- I forgot
24 that -- compared those concentrations to standards
25 in various sections of the Illinois River and 04:11PM

1 tributaries.

2 Q Okay. That data is in a figure or appendix?

3 A It's in a table.

4 Q It's in a table?

5 A And the data -- summarized in the text and the 04:11PM
6 data are in the appendix.

7 Q Okay. I guess I missed that. Can you show me
8 where that is?

9 A Yeah. These calculations were made by other
10 people who were designated in here. It's about a 04:12PM
11 whole page dedicated to that, and it starts on Page
12 39, and you see where my part of this goes down to
13 below the second paragraph, and then it mentions
14 there that this last sentence of the last paragraph
15 the people who did these computations and who 04:12PM
16 they're with, and then it goes on there comparing
17 existing data with the stream standards --

18 Q Okay, and --

19 A -- over to Page 40, to the middle of Page 40.

20 Q Okay. Previously I didn't have this as a 04:13PM
21 section identified as something that you had
22 authored, the section -- Paragraphs 3 --

23 A That's right because I didn't write it.

24 Q Who wrote it?

25 A These fellows, Brian Bennett and Robert Van 04:13PM

1 Waasbergen, and I offered some edits.

2 Q So Mr. Bennett and Mr. Van Waasbergen's
3 opinions are set forth in Paragraphs 3, 4, 5?

4 A Well, they're not exactly opinions. They're
5 just -- they're comparing observed data with the 04:13PM
6 standard with the percentages of violations.

7 Q Okay, they -- but Mr. Bennett and Mr. Van
8 Waasenberger --

9 A Waasberg --

10 Q Waasberg? 04:14PM

11 A Waasenbergen.

12 Q Van Waasbergen. So Mr. Bennett and Mr. Van
13 Waasbergen did the work --

14 A They did the work.

15 Q -- that's in the third, fourth, fifth 04:14PM
16 paragraph on Page 39?

17 A Right.

18 Q The con -- the remainder of the paragraph,
19 first paragraph on 40; correct?

20 A Yeah. 04:14PM

21 Q Did they do any more work?

22 A And the next two paragraphs down to the middle
23 of the page.

24 Q So do you intend on offering testimony at the
25 trial in this matter about water quality violations 04:15PM

1 in segments of streams referenced in these sections?

2 MR. PAGE: Object to the form.

3 A I frankly don't know who's going to do it.

4 It's in our report. I think that's under discussion

5 who's going to present it. 04:15PM

6 Q Okay. Did you look at this specific data and
7 make determination of violation?

8 A I didn't.

9 Q Okay.

10 A I didn't do the computations, and so -- 04:15PM

11 Q So you may or may not offer opinions about
12 this?

13 A I -- I don't know what to say. I'd rather not
14 testify to these numbers, but we'll have to see.

15 Q I hope you get your way. Why would you rather 04:16PM
16 not testify about these numbers?

17 A Because I didn't do the calculations.

18 Q Okay. Have you formed any opinions regarding
19 whether the quality of water in the Illinois River

20 or streams in the Illinois River watershed is 04:16PM
21 adequate?

22 MR. PAGE: Object to the form.

23 A No, I have not.

24 Q Okay.

25 A Well, adequate for what? 04:16PM

1 Q Well, let's say for -- I think we just went
2 through, you know, certain uses like recreational
3 uses.

4 A I did check -- I mean this is checking whether
5 the water meets standards or not, which is wrapped
6 into your question, and so, yeah, I checked it, I
7 read it. I actually edited it to some extent.

04:17PM

8 Q But you didn't perform the calculations?

9 A I didn't perform the calculations.

10 Q Okay, and having said that, that you
11 haven't -- that you didn't perform the calculations,
12 have you formed an opinion that you're going to
13 offer at trial as to whether or not the standards
14 have been violated?

04:17PM

15 A Back to this question, I don't know who is
16 going to present it. It's --

04:17PM

17 Q You previously told me you would prefer not to
18 present it because you didn't do the calculations;
19 correct?

20 A Yeah, but we haven't decided at this time.

04:18PM

21 MR. BOND: Okay. I don't have any more
22 questions. Thank you, sir.

23 VIDEOGRAPHER: We're now off the Record.

24 The time is 4:18.

25 (Whereupon, a discussion was held off

1 **A** On the graph?

2 **Q** Yes.

3 **A** That's defined by this equation down here.

4 Log chlorophyll equals 1.09 times the log of total

5 phosphorus minus .63, that's a predictive equation

04:21PM

6 for chlorophyll, average chlorophyll from average

7 phosphorus that is based on 143 Missouri lakes, that

8 data were from Jones and Knowlton, and so we used

9 this relationship to determine whether the extent to

10 which Tenkiller and Broken Bow agreed with that

04:21PM

11 dataset --

12 **Q** Okay.

13 **A** -- in terms of response to phosphorus,

14 response of algae to phosphorus.

15 **Q** Who prepared Figure 6?

04:21PM

16 **A** Melina Foster with assistance of Dennis Cooke

17 and myself.

18 **Q** Okay, and you helped her in determining how to

19 put that line on there?

20 **A** Well, yes. She's a very clever lady, so we

04:22PM

21 just gave her the numbers and she produced it.

22 **Q** And those numbers, if I understand it

23 correctly, come from the Jones data on 143 Missouri

24 reservoirs?

25 **A** The numbers, if you put those 143 -- what you

04:22PM

1 significantly different between the two reservoirs?

2 A Yes.

3 Q Okay. What data did you use to come up with
4 this --

5 A The catch data in the figure. The actual 04:42PM
6 catch data are not in the appendix, but the
7 defendants asked for that data, and it was furnished
8 probably two weeks ago.

9 Q Okay, and is that catch data again from the
10 Oklahoma Department of Wildlife Conservation? 04:42PM

11 A It is.

12 Q And --

13 A It's in the report that Tony Gendusa wrote and
14 which I base this information on.

15 Q Where is Tony's report? 04:42PM

16 A Well, the defendants have it. Unfortunately
17 it's not signed by him, but you have it, and I think
18 it's in here. It's part of this.

19 Q Is it in Exhibit 11A?

20 A Yes. 04:43PM

21 Q Did we mark that earlier, the Tony --

22 A Well, I don't think you specifically marked
23 it.

24 Q And does Tony's report then compare this data?

25 A Yes. Well, compare what data? 04:43PM

1 Q The catch per unit data for smallmouth bass in
2 Broken Bow and Tenkiller.

3 A He prepared the graph for it.

4 Q Is that graph in your report or in the Tony
5 report that's in your --

04:43PM

6 A It's in Tony's report and in our report.
7 Here's Tony's report right here.

8 Q And it's double-sided and goes how many pages
9 here?

10 A Should only be about four.

04:44PM

11 Q And this is --

12 A One, two, three, four, five.

13 Q And this is titled Stocking Success and
14 Population Trends in Selected Game Fish Species,
15 Tenkiller Ferry Lake and Broken Bow Lake, Oklahoma?

04:44PM

16 A Right.

17 Q I think we don't need to pull that out since
18 we've identified it in there. In looking at this
19 data, did you account for the years in which test
20 fishing was not conducted for both lakes?

04:45PM

21 A Sorry.

22 Q That's okay. In looking at the data for
23 Broken Bow and Tenkiller, we're talking about
24 smallmouth bass, did you account for years in which
25 test fishing was not conducted on the lakes?

04:45PM

1 **A** No. You mean count for it -- you mean include
2 that as some --

3 **Q** Did you consider that?

4 **A** No, no. If there's no bar there, no number
5 entered, they didn't sample. 04:45PM

6 **Q** Did you do any statistical analysis of the
7 data or does the table just graph what it is?

8 **A** Todd King did some statistical analysis.

9 **Q** Can you describe what that is for me?

10 **A** That was a paired -- it was -- 04:46PM

11 **Q** A parametric?

12 **A** No. It was t-test, student t-test, comparison
13 to means.

14 **Q** A student t-test?

15 **A** Uh-huh. 04:46PM

16 **Q** Is that a parametric or non-parametric test?

17 **A** Parametric.

18 **Q** Were any transformations of the data required
19 prior to conducting the test?

20 **A** Not in that go-around, but that was done 04:46PM
21 later.

22 **Q** Transformations were done later?

23 **A** Uh-huh.

24 **Q** By whom?

25 **A** Todd King. 04:46PM

1 quantitative evaluations of prey availability,
2 interspecific competition or any additional
3 evaluation of physical habitat, you have not done
4 anything else?

5 **A** Right, correct. 04:48PM

6 **Q** All right. Let's go through these same kinds
7 of questions for largemouth bass. Did you do a
8 comparison of the catch per unit efforts of
9 largemouth bass on Broken Bow and Tenkiller?

10 **A** Those catch data are in Tony's report, right. 04:49PM

11 **Q** So let's go through these same kinds of
12 questions. Did you account for the years in which
13 test fishing was not conducted for both the
14 reservoirs?

15 **A** We accounted for that, right. 04:49PM

16 **Q** You did for the largemouth bass?

17 **A** There are no -- if there are no data there,
18 they didn't sample and so they weren't counted in
19 the mean.

20 **Q** And did Todd King do statistical analysis on 04:49PM
21 these data for largemouth bass also?

22 **A** He did.

23 **Q** And did he do the same student t-test?

24 **A** (Witness nods head up and down).

25 **Q** And were there any transformations of the data 04:49PM

1 required prior to the testing?

2 **A** Not for that -- not for what is in the report,
3 but then he subsequently did for smallmouth bass.

4 **Q** He subsequently did it as well as for
5 largemouth bass?

04:50PM

6 **A** Right.

7 **Q** And where is that; is that in his report or
8 your report, or is that just subsequent work that he
9 did?

10 **A** Let's see. I think that's just verbal. It
11 was just verbal. The only thing that changed -- you
12 have a copy of it here. If you look at this again,
13 these values -- these new values written over here,
14 these are from log transform. It doesn't say that
15 on there but --

04:50PM

04:51PM

16 **Q** Okay, and you got those from Todd King?

17 **A** I did.

18 **Q** You wrote them in after a conversation with
19 Todd King?

20 **A** I did.

04:51PM

21 **Q** Let's go ahead and mark that as a separate
22 exhibit then if we can. And we've marked the
23 notations you made on your notes on Exhibit 48 --

24 **A** There's two pages.

25 **Q** -- to be pulled out of Exhibit 11, and there

04:52PM

1 are two pages there that we'll include in Exhibit 48
2 then.

3 A You have this in another set someplace.

4 Q But what we have in another set someplace,
5 does that have your notes that you made after
6 speaking with Mr. King?

04:52PM

7 A No.

8 Q And when did you speak with Mr. King and make
9 those notes on Exhibit 48?

10 A I think Monday.

04:52PM

11 Q Monday of this week?

12 A Yes.

13 Q What are the spawning and early development
14 requirements for striped bass?

15 A What do you mean, water quality requirements
16 or what?

04:53PM

17 Q Well, that's a different question, but I can
18 ask you what effect water quality has on striped
19 bass.

20 A You're asking me that?

04:53PM

21 Q Sure. We can do that one first, if you'd
22 like.

23 A Okay. There's been quite a lot of work done
24 by Coutant on that, and these criteria that I used
25 here for both walleye and striped bass are

04:53PM

1 Q Are you aware that Lake Tenkiller State Park
2 was cited for improper sewage lagoons leaking in a
3 broken lift, which allowed seepage to seep into the
4 lake during flooding events?

5 A No, I wasn't. 06:13PM

6 Q Would that have been important information in
7 your analysis?

8 A Probably not because -- well, I guess, you
9 know, I'm trusting Engel to estimate the loading to
10 the lake from various sources. Dennis and I had no 06:14PM
11 role in that at all.

12 Q Okay. Did you see anything in Engel's report
13 or in the information he considered which indicated
14 that he looked at any loading that may have occurred
15 from Lake Tenkiller State Park? 06:14PM

16 A I didn't.

17 Q Okay. What about loading from marinas and
18 other recreational activities around Lake Tenkiller;
19 did you see anything in his report that indicated he
20 considered that? 06:14PM

21 A No, I didn't.

22 Q You indicated that there were individuals at
23 CDM who helped you prepare your report, the figures
24 and appendices to your report.

25 A Uh-huh.

1 Q Why did CDM assist you with those things?

2 A Because I preferred to have somebody do the
3 calculations. It's much more efficient than if I do
4 them and prepare these things. Melina Foster is a
5 whiz and I'm not, and I just didn't have the time to
6 do that or the inclination.

06:15PM

7 Q And I noticed that on the figures, that it
8 references data that's used in the creation of many
9 of the figures in your report?

10 A That's right.

06:15PM

11 Q Did you indicate to Melina which figures --
12 which data to utilize?

13 A Absolutely.

14 Q Did she have any of her own independent
15 authority to determine what data went into those
16 figures?

06:15PM

17 A No. Melina was strictly dealing with Dennis,
18 and I asked her to do it.

19 Q Was the use of CDM individuals for that
20 function a part of one of your requirements for
21 becoming an expert in this case?

06:15PM

22 A No. We just worked into that, and it wasn't
23 an efficient way to go.

24 Q Is there any other group of individuals you
25 would have preferred to utilize for that --

06:16PM

1 be giving testimony in this case concerning water
2 quality standards relating to phosphorus levels in
3 the rivers and streams of the Illinois River
4 watershed; do you remember when you were asked
5 questions about that?

06:25PM

6 **A** Yes, yes.

7 **Q** And have you visited with counsel now about
8 whether or not you are going to be giving testimony?

9 **A** I visited with counsel.

10 **Q** And will you be giving testimony on those
11 issues in this case?

06:26PM

12 **A** I will.

13 **Q** Finally, Dr. Welch, let me ask you this: Do
14 you remember your testimony about statisticians --
15 excuse me, statistics comparing the catch rates
16 between the three different types of fish that were
17 found in Broken Bow and Lake Tenkiller?

06:26PM

18 **A** Uh-huh.

19 **Q** And you mentioned some statistical analysis
20 had been done by Todd King?

06:26PM

21 **A** Yes.

22 **Q** Has any other statistical analysis been done
23 on those catch --

24 **A** Yes. Jim Loftis at Colorado State prepared
25 some non-parametric test.

06:26PM

1 Q And what did he find?

2 A We found that the level of significance are,
3 you know, are at the 5 percent level.

4 MR. PAGE: I pass the witness.

5 REDIRECT EXAMINATION

6 BY MR. BOND:

7 Q Dr. Welch, Mr. Page just asked you a question
8 about you providing, and it was a very well worded
9 question that I honestly didn't have my pen out to
10 write it all the way down, but it deals with you
11 giving testimony at trial in this case related to
12 phosphorus water quality in, I believe, rivers and
13 streams in the Illinois River watershed.

06:27PM

14 A That's right, yeah.

15 Q Okay. Earlier today, if I understood you
16 correctly, you weren't sure?

06:27PM

17 A I wasn't sure.

18 Q Okay. Now you're sure?

19 A Now I'm sure.

20 Q Okay. What testimony are you going to give?

06:28PM

21 A I'm going to give testimony that relates the
22 calculated values in these streams to the standard,
23 and it's in our report. It presents the percentage
24 of the samples that are in violation of the 37
25 micrograms per liter level.

06:28PM

1 Q Okay, and that was on pages -- those were the
2 paragraphs on Page 39, Paragraphs 3, 4, 5, Page 40,
3 Paragraph 1, 2, 3; is that right?

4 A Yes. Starts with 39, middle of the page, and
5 goes forward to the middle of the next page. 06:29PM

6 Q Okay, and this was calculations that were
7 performed by someone other than you?

8 A That's right.

9 Q Okay. Calculations performed on data not
10 collected by you; correct? 06:29PM

11 A That's right.

12 Q Prior to these paragraphs being included in
13 your report, did you review and check all the
14 calculations that are included?

15 A I reviewed the results of it, yes. 06:29PM

16 Q Did you review the actual calculations?

17 A What do you mean?

18 Q Did you check their math?

19 A I didn't check their math.

20 Q But, nonetheless, are you willing to vouch for
21 the reliability information in these paragraphs
22 right now?

23 A Yes.

24 MR. BOND: I don't have anything further.

25 Anyone else? 06:30PM

1 MS. HILL: Yes.

2 REDIRECT EXAMINATION

3 BY MS. HILL:

4 Q Dr. Welch, when did Jim Loftis do some
5 statistical comparisons of the catch rate data in 06:30PM
6 Broken Bow and Tenkiller?

7 A Yesterday.

8 Q And have you seen those comparisons?

9 A Have I seen the comparisons?

10 Q Have you seen the work he did? 06:31PM

11 A Yes.

12 Q Where is that?

13 A Where is it? That's a good question. It's
14 back in the room. It's in the other room down the
15 hall. 06:31PM

16 Q Do you want to go get it for us?

17 A Sure. Thank you.

18 VIDEOGRAPHER: We the time is 6:32. We're
19 going off the Record.

20 (Following a short recess at 6:32 p.m., 06:32PM
21 proceedings continued on the Record at 6:35 p.m.)

22 VIDEOGRAPHER: We are now on the Record.

23 The time is 6:35.

24 Q Dr. Welch, we're back after a short break, and
25 we have Exhibit 50 now, which you went and got. Can 06:35PM

1 you tell me what is Exhibit 50?

2 **A** 50 is a retesting of the catch data for the
3 three species of fish between Tenkiller and Broken
4 Bow done by a non-parametric test by Jim Loftis.

5 **Q** The page, Exhibit 50, is actually an E-mail 06:35PM
6 from Jim Loftis to Mr. Page; is that correct?

7 **A** Yes, that's correct.

8 **Q** And this was sent yesterday, August 14th at
9 9:12 p.m. Did you receive a copy of this piece of
10 paper? 06:36PM

11 **A** That is the copy I got or that's the copy that
12 David Page got that he showed me.

13 **Q** And when did you receive this paper?

14 **A** This morning.

15 **Q** Okay, and did you consider any of this 06:36PM
16 information or work done by Jim Loftis when you
17 prepared your report?

18 **A** No.

19 **Q** And are you familiar with whether Mr. Loftis
20 -- or is it Dr. Loftis? 06:36PM

21 **A** I think professor anyway.

22 **Q** Okay. Dr. Loftis has prepared an expert
23 report in this case?

24 **A** No. I'm sure he hasn't. That's probably all
25 he's done. 06:36PM

1 Q Are you aware of any work he's done before
2 this work that's described in Exhibit 50?

3 A For what? For this case?

4 Q Yes.

5 A No, I'm not. That doesn't mean he hasn't. 06:37PM
6 I'm not sure.

7 Q Before receiving this E-mail, Exhibit 50, were
8 you familiar with Jim Loftis?

9 A No. I'd never met him.

10 Q Have you ever spoken to him? 06:37PM

11 A I've spoken to him on the telephone.

12 Q When did you speak with him on the telephone?

13 A Yesterday.

14 Q And what was the purpose of that call
15 yesterday? 06:37PM

16 A To discuss the statistical analysis that had
17 been performed and see what he thought about those
18 analyses.

19 Q Did you initiate that phone call?

20 A Did I initiate? I think David Page called 06:37PM
21 him. I did not have his number, but it was my --
22 well, it was a discussion we had and we decided to
23 do it.

24 Q Was there some concern or some reason that you
25 wanted to go back and look at the statistical 06:38PM

1 analysis of this catch data?

2 **A** Yes, because the smallmouth bass data were not
3 normally distributed, and we log transformed -- I
4 gave you that information, and that result was not
5 as significant as the previous one. So we talked to 06:38PM
6 Jim Loftis, and he suggested non-parametric might be
7 a better way to present this, and so he did the
8 test. His opinion was that the differences in these
9 means were sufficient to indicate that they were
10 different, and so he did the test, and they were. 06:39PM

11 **Q** Was this additional statistical analysis
12 something that you requested or wanted done?

13 **A** I started out requesting this statistical
14 analysis in the beginning when I contacted Todd
15 King. Well, the data that you have there, that you 06:39PM
16 went over with me, you asked me if I requested that,
17 and I did.

18 **Q** Define the time of when you requested that
19 analysis from Todd King. Just give me a general
20 time frame. 06:39PM

21 **A** Probably -- well, it's in our report, so it
22 was before, you know, the first part of May or
23 something.

24 **Q** And did you also want some additional
25 analysis? 06:40PM

1	A From Todd King?
---	--------------------------

2 Q Done from Todd King or someone else, such as
3 Jim Loftis?

4 **A** Well, I did ask Todd King to do additional
5 analysis of the log transform that you had. 06:40PM

6 | Q Did you ever ask him to do the non-parametric
7 | test?

8 **A** Did I ask him? No, I didn't. I don't think
9 so. He did the log transform and that's what he
10 did. 06:40PM

11 Q So after you received Todd King's analysis
12 that you've referred to here, did you still have
13 concerns about what his analysis was showing, such
14 that you wanted some additional or a different type
15 of analysis?

06:41PM

16 **A** Well, I wanted to discuss it with him and see
17 what he thought and he suggested a non-parametric
18 analysis.

19 Q Todd King did?

20 **A** No, no -- oh, Todd King's results you're
21 asking me about?

06:41PM

22 Q I guess I'm really getting at, why was it
23 necessary to call Jim Loftis and do another
24 analysis.

25 | **A** Because the log transform didn't give a high 06:41PM

1 enough -- I mean it provided a probability value of
2 .17.

3 Q You were aware of that at the time you
4 prepared your report?

5 A And so I just thought I would talk to Loftis 06:41PM
6 about it, and he said, well, it's probably because
7 there's a couple of high points in the distribution,
8 and he looked -- and I was just interested in his
9 impression of the data, and so he suggested he do a
10 non-parametric test, so he did. I mean, I'm -- you 06:42PM
11 know, any time you look at datasets that have
12 variability, I mean, you want to try to put some
13 formal statistics on there even though it's pretty
14 clear to your eye that there's a difference.

15 Q And the variability in that dataset was clear 06:42PM
16 to your eye at the time that your report was
17 prepared and distributed; is that correct?

18 MR. PAGE: Object to the form.

19 A Say that again.

20 Q The variability that you described to me, that 06:42PM
21 was there when you distributed and made your report?

22 A The variability was there, yes.

23 MR. PAGE: Object to the form.

24 Q The variability in the data was something you
25 noticed at the time your report was prepared and 06:43PM

1 distributed to the defendants in this case?

2 MR. PAGE: Same objection.

3 Q You can answer the question.

4 A The -- you mean the variability in the -- I am

5 so tired I cannot believe. I'm not even thinking 06:43PM

6 straight. Look, I wanted to put some statistics on

7 these data, okay, and that's what I started to do,

8 and that's how I asked somebody to do the

9 computations for me, and that's what Todd King did.

10 Okay. He didn't look at the -- he didn't log 06:43PM

11 transform, and so I asked him to do it again, all

12 right, and I thought that maybe a non-parametric

13 test might be a better way to go, and so I called --

14 I mean, we called Jim Loftis and so that's what he

15 performed. So it was trying to improve on the 06:44PM

16 analysis. That was my goal.

17 Q Before your report was distributed to the

18 defendants, did you ever discuss a non-parametric

19 test with Todd King?

20 A No. 06:44PM

21 Q Okay.

22 MS. HILL: I have no further questions.

23 Thank you.

24 MR. PAGE: That's it. Read and sign.

25 VIDEOGRAPHER: This concludes the 06:44PM